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ABSTRACT

The hypothesis that participation in a Palama Settlement House after-school, academic-athletic program leads to an increase in academic performance in the targeted subject (math) in school is examined in this document. It is also of interest to know whether or not the program is reaching its target group of low academic achievers. A sample of youngsters who completed at least one academic athletic season in the program is matched for sex, grade in school, and school attended with a nonparticipating control group. For both groups, school grades in math, verbal and math scores on standardized tests (STEP and SCAT), and attendance in school are compared for the year prior to and following the program. These scores are obtained from school records. There is no difference between the two groups on preprogram school math grades and verbal or math achievement tests. The post program scores show that academic gains made in the program result in improved post program STEP and SCAT math scores but do not show up in postprogram school math grades. The findings underscore both a success in the Palama Program for improving math ability and a failure for this to be reflected in school math grades. This implies the need for closer cooperation between youngsters school teachers and the Palama academic coaches to ensure the generalization of program results to school performance. (Author/AM)

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ED126207

PALAMA SETTLEMENT: EFFECT OF THE ACADEMIC-ATHLETIC PROGRAM ON FUTURE SCHOOL PERFORMANCE

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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PREFACE

In December, 1973, the Social Welfare Development and Research Center issued a report entitled New Approaches and Innovations at Palama Settlement. It summarized two important programs at Palama Settlement, the In-Community Treatment Project and the Behavior Modification Sports Program. At that time, Palama Settlement was characterized as being "one of a few programs in this State that have adopted a research strategy to continually assess effectiveness through objective data." This report testifies to the accuracy of that statement. The data presented are part of this continuing research strategy to assess the effect of the academic-athletic program on future school performance. The results have important implications, not only for the program at Palama Settlement, but for many similar programs in this State as well as on the Mainland.

For this accomplishment we once again recognize the facilitative role played by the Board of Trustees and the Executive Director, Robert H. Higashino. The prime mover of this research effort is Barbara O'Donnell who engaged in this study in preparing a Research Paper for her M. S. W. at the School of Social Work, University of Hawaii. This report has been adapted from her Research Paper with minor revisions. Many people helped make her study possible. Of prime importance are Earlene Chambers and Kenneth Ling of Palama Settlement who continue to be both committed to this project and receptive to innovations; Joel Fischer, Professor in the School of Social Work, University of Hawaii, who served as a most able research advisor; and Clifford R. O'Donnell of the Social Welfare Development and Research Center who provided technical assistance in research design and analysis, and consultation.

Jack T. Nagoshi, Director
Social Welfare Development
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ABSTRACT

This study examines the hypothesis that participation in a Palama Settlement House after-school, academic-athletic program leads to an increase in academic performance in the targeted subject (math) in school. It was also of interest to know whether or not the program was reaching its target group of low-academic achievers. A sample of yourgsters who completed at least one academic-athletic season (basketball or football) in the Settlement program were matched for sex, grade in school and school attended with a non-participating control group. For both groups, school grades in math, verbal and math scores on standardized tests (STEP and SCAT) and attendance in school were compared both for the year prior to and following the program. These scores were obtained from school records.

There were no differences between the two groups on pre-program school math grades and verbal or math achievement tests. Thus the pre-program scores show that volunteers were the same academically as non-volunteers. The post-program scores show that academic gains made in the program result in improved post-program STEP and SCAT math scores but do not show up in post-program school math grades.

These findings underscore both a success in the Palama program for improving math ability and a failure for this to be reflected in school math grades. This implies the need for closer cooperation between youngsters' school teachers and the Palama academic coaches (programmers of academic material) to ensure the generalization of program results to school performance.

INTRODUCTION

The problems of poor school performance and non-attendance, dropping out of school, school vandalism and drug abuse are well known to educators, law enforcers and those in the helping professions. Polk and Schafer propose "that educational failure - by schools as well as by students - is directly related to delinquency."[1] Fochios stated that, "failure to master the tools of learning - particularly reading skills - leads children to employ coping methods of bravado, 'acting out', and truancy to escape embarrassment, anxiety and failure."[2]

Palama Settlement House in Hawaii has an after-school program to improve academic performance in a scholastically low-achieving target population. Their basic concept is rooted in the behavior modification approach of reinforcing the prosocial behaviors of studying and team cooperation. The program has been shown to improve students' math ability from .5 to 1.2 school grades in 10 weeks.[3] This study is being undertaken to determine if this improvement results in higher school performance in math grades, achievement tests and attendance.

Relevance of School to Delinquency

"Over one million young people are referred to the juvenile courts each year, the number representing close to 3% of all children between the ages of 10 and 17 (the population at risk)."[4] "At the same time, available evidence strongly suggests that delinquent commitments result in part from adverse or negative school experiences."[5] The influences of poverty, broken and troubled families and slum conditions are not denied. Elimination of juvenile delinquency waits upon major social change; however, as studies have shown a connection

between juvenile delinquency and the school, there must be change as an inevitable part of prevention.

For low-performance students, school is associated with punishment because of failed courses, negativism of teachers and parents, and a negative self-image. Association by school failures with others who have failed and a commitment to a delinquent community are possible avenues for the drop-out. "The essential notion of the view is that, as a result of the lowering of an individual's commitment to success and conformity, there is an increased probability of his turning to a characteristically rebellious peer culture or significant social attachments which, in turn, increase the chances of involvement in delinquency."[6] Such a notion is supported by Empey and Lubeck[7] who found a high correlation between dropping out of school and delinquency.

Review of Literature

The past 15 years have seen an enormous amount of literature published on the subject of behavior modification. Material on operant conditioning, in particular token economies which rely on the principle of immediate reinforcement for desired behavior,[8] forms the basis for a program such as Palama's Behavior Modification Sports Program, wherein athletics are used as the reinforcer to increase academic behaviors. Studies on various types of programs, including programs for youth in a correctional facility (Cohen and Filipczak,[9] O'Donnell and DeLeon,[10] and McKee and Clements[11]) and for drop-outs from school (O'Donnell and Stanley[12]) have suggested there may be considerable merit in utilizing such an approach.

One study which closely parallels the Settlement program under investigation here was done by Wolf, Giles and Hall.[13] This program had a sample of 16 low-achieving students from a low-income neighborhood in Kansas City. All

of them scored at least two years below the norm for their grade level (5th and 6th grades) on the Stanford Achievement Test (SAT). The parents were contacted by a social worker who explained the program to them; all parents contacted enrolled their children. The students attended "school" in a nearby church basement each weekday after regular school for two and a half hours, and on Saturday morning during the academic year. The program was in progress for 15 months. Points were given for academic work completed either from the regular school or the remedial school; for example, a student received 100 points for an A and 75 points for a B, etc. Reinforcers, which could be obtained with the earned points, included field trips, snacks, novelties and clothes.

Other contingencies were provided for in the program, such as bonuses for instructors of children whose school grades improved, bonuses for good student behavior and attendance, parties for report card improvement, and an opportunity for their regular school teachers to add points for excellence in regular school or to subtract points for inappropriate behavior.

The primary goal was to help students make larger than usual gains in their academic skills. The remedial group was randomly selected from the same pool of low-achievers as a no-treatment control group. Students were ranked according to reading scores as measured by the SAT. The lowest scoring student was assigned to the remedial group, the next lowest to the control group, and so on. Sixteen students were assigned to each group. Fifteen were in each group at the end of the program. SAT scores and report card grades were recorded for the two years preceding the program and for the year following the program. The median gain after the 15 month program on report cards for the remedial group was 1.1 grade points, from slightly below a D to a C average, while the control group gained 0.2 grade points. The median gain of the remedial group on the SAT was 1.5 years as compared to 0.8 years for the controls. The previous median gain on the SAT for both groups was 0.6 years.

The cost per student was about $250 a year. The authors suggested that costs could be reduced by using reinforcers which already exist in the educational setting. One of the suggested reinforcers was athletics, which the Palama program uses as a consequence for increasing academic behavior.

Description of Palama Settlement

Palama Settlement House, one of Hawaii's oldest social work agencies, was founded in 1896. Since that year, it has pioneered many social programs such as out-patient clinics, family planning clinics, programs for the elderly, the young and many more. Historically, Palama Settlement efforts have gone into aiding the disadvantaged. One of these programs is the Behavior Modification Sports Program.[14] It was reasoned that a sports program could provide an outlet for aggression and at the same time teach lessons about sportsmanship and competitiveness. The sports program is also used for the additional purpose of providing motivation to improve academic skills. Boys participate as athletes and girls participate as cheerleaders. This participation is contingent upon studying and improving academic performance. Points are earned by studying in an individually planned program and for sports participation. Students, between 10-16 years of age, from a Model Cities area who volunteer for the program must sign a contract specifying behaviors to be performed, such as:

1. Do their best on all academic testing.
2. Accept the academic program designed by their 'academic coach' (the learning engineer at the Learning Center).
3. Complete their academic program with at least 90% accuracy each week to be permitted to practice with the athletic team.
4. Participate in daily athletic practice.
5. Eat at the Settlement daily during the athletic season according to dietary prescriptions.

6. Follow all recommendations based on medical and dental examinations.

Once the contract is signed and the student enters the sports program, academic skills are assessed and an individualized program is prepared; testing is done at the Center and must reflect 90% accuracy. Points are earned for hours of academic work and for performance on the athletic field. These points and gold stars are publicly posted and can be exchanged for sports equipment and sportswear. Volunteer academic coaches also receive stars redeemable for clothes and dinners, etc. A sample daily schedule for the students might be as follows: practice 4:30-6:00 p.m.; shower 6:00-6:30 p.m.; dinner 6:30-7:00 p.m.; study hall 7:30-8:30 p.m. The use of Palama facilities for study hall is optional, but points are awarded for using it. Sports competitions are held on weekends.

A previous study on the program under investigation here by O'Donnell, Chambers and Ling[15] found that reliable gains of .5 to 1.2 grade levels on the Stanford and California Achievement Tests were achieved during the 10-week athletic season between pre- and post-testing in all areas in which academic work was programmed. These results suggested that youth whose mean pre-scores are below average on national norms can achieve sizable gains in math in 10 weeks.

Research Question and Hypothesis

The present study was designed to answer two questions not addressed in the above mentioned study. First, were those who volunteered for the program higher, equivalent or lower in school performance as compared to students from the same area and schools who did not volunteer for the program? In other words, is Palama reaching its low-achieving target group? If the students who volunteered for the program were performing higher in school to begin with,

this could be the reason for the program's success. It would also mean the target group was missed. If the academic levels were equivalent, results could be generalized to similar students in Kalihi-Palama schools, but the target group would again be missed. If the program volunteers were of lower academic backgrounds, then the target group would be reached.

The second question seeks to answer whether or not the program results generalize to post-program school performance. The hypothesis is that Palama program efforts do result in higher academic performance in the targeted subject in regular school.

METHODOLOGY

Sample Selection

Youth who voluntarily participated in the athletic-academic program at Palama Settlement during the Fall, 1971, comprised the experimental group. Non-participants, who were randomly selected, made up the control group. The random procedure to select non-participants was the same at each Kalihi-Palama school that was attended by a Palama volunteer. This procedure consisted of matching random numbers from a random number table with a list of students in the same grade as the volunteer. If the random number matched a girl with a male volunteer, that number was discarded and the next one was tried until each Palama volunteer was matched with a random selection of students from the same school, in the same grade (grades 6-10), and of the same sex.

Measures of Outcome

In order to determine if Palama was reaching its low-achieving target group, pre-program entrance data were collected from the school records for both the experimental and control group students. These data were: school attendance records, school math grades, and math and verbal percentile scores on the Sequential Tests of Educational Progress (STEP) and the School and College Ability Test (SCAT).

School math grades and STEP and SCAT math scores are measures used since the Palama program in the Fall, 1971, focused only on math skills. Every other year, the program focuses on math skills; in alternate years, the focus is on verbal skills.

Since the focus in the Fall of 1971 was on math, verbal achievement test scores were collected to serve as a comparison control for any differences in

math scores between the experimental and control groups. It was reasoned that if the Palama program had any effect on achievement scores, it should occur only in the math section and not in the verbal sections of the SCAT and STEP. Improvement in both the math and verbal sections would negate assuming that improvement in math was due to Palama's intervention.

Description of Data Collection

All data were obtained from school records at the schools involved. The pre-program data were collected for the Fall, 1970, and the Spring, 1971, since the program being examined was in progress in the Fall of 1971. The pre-program data were collected in order to compare the academic level of volunteers with non-volunteers.

These same data, school attendance, school math grades, and STEP and SCAT math and verbal scores, were collected for the two semesters following the program (Spring and Fall of 1972) to determine if the already known Palama improvement generalized to post-program school performance.

Attendance records were available for 34 Palama students who were enrolled in school both before and after their participation in Palama. Math grades were available for 28 of those 34 students as not all 34 were enrolled in pre- and post-Palama math classes. The number of students who had taken both pre- and post-program STEP and SCAT tests numbered 12. Since complete data were therefore not available for all students, numbers of students range from 12 on achievement test comparisons to 34 students for attendance comparisons.

Statistics Used

The t-test was used to measure differences between the control and experimental group pre-Palama (Table 1) and to measure the differences between the two

groups on school performance after Palama (Table 3).

The Pearson product moment correlation coefficient was used to determine if there was a relationship between the performance of students in the Palama program and their post-Palama performance in regular school. This was intended to determine whether the math gains made in Palama correlated with post-program school performance.

FINDINGS

This study is designed to answer two questions. The first is whether the Palama program is reaching its low-achieving target group and the second is whether involvement in the Palama program will improve post-program school performance. For clarity these two questions are dealt with separately; the former question is discussed first and the latter question follows.

Low-Achieving Students: Is Palama reaching its Target Group?

The Palama Settlement academic-athletic program is essentially aimed at low-achieving students because they are likely candidates to drop out of school. As discussed earlier, the drop-out is a potential delinquent, and this potential drop-out group of low-achievers is Palama Settlement's target group. In order to determine if this group of low-achievers was volunteering for the program, pre-program entrance data on school absences, school math grades, and STEP and SCAT test scores were collected for the two semesters prior to the program. The purpose of this study, in part then, is to determine if youth who volunteered for the program differed from non-volunteers, and if so, on which measures.

The experimental group would have to be significantly lower than the control group on at least some of the measures listed in Table 1 for Palama to be considered as successful in attracting the low-achieving target group. Pre-program differences between Palama volunteers and the control group of non-volunteers are presented in Table 1.

Since no predictions were made, the data in Table 1 were analyzed by two tailed t-tests. This analysis revealed that the experimental and control groups differed significantly only in school attendance. This shows that the Palama project was not reaching its low-achieving target group.

Table 1

Means of Pre-Program School Performance for the 1970-71 School Year

Measures	Experimental		Control				
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	N	t	Lev. of Sig.
Days Absent	13.4	12	7.1	6.8	34	2.70	.01
Math Grade[a]	70	9	71	8	28	.31	NS
STEP Math	45	28	36	29	12	.78	NS
SCAT Quant	44	32	38	27	12	.55	NS
STEP Reading	49	28	40	26	12	.80	NS
SCAT Verbal	40	27	38	24	12	.19	NS

[a]Grades were converted from letters to numbers as follows: A = 90, B = 80, C = 70, D = 60, E = 50, with a "-" or "+" counting for 5.

Generalization of Palama Results

The second question in this study is whether the math gains made as a result of the program generalize to post-program school performance. This is assessed by two different methods, first by comparing the means of the post-program STEP and SCAT (Table 2) for both the experimental and control group, and second by correlating, for the experimental group only, program math gains and post-program school performance (Table 3).

Table 2 presents data to assess whether the size of the program math gains was sufficient to raise the SCAT and STEP math percentile scores of the experimental group in relation to the control group.

Table 2

Means of Post-Program School Performance on STEP and SCAT Math Tests

Measures	Experimental		Control				
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	N	t	Lev. of Sig.
STEP Math	42	34	39	22	12	.28	NS
SCAT Quant.	42	34	32	30	12	.83	NS

These data were analyzed using one-tailed t-tests. None of the differences were statistically significant between the experimental and control groups. It

is apparent that the average gains made by students in the experimental group were not large enough to make their percentile SCAT and STEP math scores significantly greater as a whole than those students in the control group.

The second way to assess the impact of the Palama program (Table 3) is to correlate the program math gains with post-program school attendance, achievement tests (STEP and SCAT taken at regular school) and school math grades. It was assumed that the results of the program would generalize to future school performance. For this assumption to be supported, program math gains and post-program performance on the math sections of the SCAT and STEP, school math grades, or school attendance would have to correlate at a significant level. Since the Palama program focused only on math skills, it was not expected that SCAT and STEP verbal scores would have a significant correlation (a control to show that any relationship to test performance is specific to the subject studied in the Palama program). Data appropriate for this analysis are school absences, school math grades, and STEP and SCAT test scores for all of the experimental group youth for the two semesters following the Palama program.

To be certain that correlations made on the basis of these post-program measures would not be affected by differences in pre-program scores all measures were statistically adjusted for any pre-score numerical differences. In this way, any remaining differences in the post-scores cannot be attributed to initial, i.e., pre-score, differences. Thus the correlation here is actually measuring the relationship between improvement in the Palama program and improvement on the school SCAT and STEP tests.

Pearson product moment correlations between adjusted math gains made in the Palama program and adjusted post-program school performance measures are shown in Table 3.

Table 3

Correlations between Program Math Gains and Post-Program School Performance Measures for the Experimental Group

Measure	Correlations				
	Computations[a]	Lev. of Sig.	Concepts[a]	Lev. of Sig.	N
Days absent, Spring	.29	NS	.24	NS	34
Days absent, Fall	.02	NS	-.05	NS	34
Math grade, Spring	-.11	NS	.03	NS	28
Math grade, Fall	-.01	NS	.07	NS	28
STEP Math	.56	.05	.73	.01	12
SCAT Quantitative	.54	.05	.39	.10	12
STEP Reading	-.32	NS	.10	NS	12
SCAT Verbal	.00	NS	-.28	NS	12

[a]Computations and Concepts were the math areas programmed and measured during the Palama program.

As shown in Table 3, Palama program math gains generalize to future academic performance as measured by STEP and SCAT math tests taken at school. One can, therefore, predict from improvement in Palama that there will tend to be an improvement on tests in school (STEP and SCAT). As expected, post-Palama SCAT and STEP verbal and reading scores did not correlate with math gains made in Palama. Therefore, it is apparent that generalization to post-Palama achievement test performance is specific to the subject studied in the Palama program. Program math gains, however, did not generalize to either school math grades or school attendance.

CONCLUSIONS AND IMPLICATIONS OF STUDY

Major Conclusions

One of the questions in this study is whether or not the Palama program results generalize to school performance in the targeted subject, math. Results in Table 3 reveal that there is a correlation between math gains made in the program and performance on the math sections of the STEP and SCAT post-program achievement tests taken in school. The significant correlations show that the higher the math score in Palama, the higher the STEP and SCAT math performance in Table 3. The correlations occurred only in the math and not in the reading tests of the STEP and SCAT, an indication that improvement was likely a function of the Palama math program and not attributable to other factors. Further, since all scores were adjusted for their pre-program levels, this result is not likely a factor that could be attributed to prior differences (e.g., "smart" students do better at Palama and at school).

The lack of difference between the means of the experimental and control groups (Table 2) on the post-program STEP and SCAT math sections indicates that the average gain made in the program is not sufficient to raise a participant's math performance relative to other students'. In other words, the control group and experimental group means are not different (Table 2). Since the correlation results show that the STEP and SCAT are sensitive to the math gains made in the program, it is reasonable to assume that longer programs which resulted in larger gains might increase a participant's math performance relative to non-participating students.

These results indicate the importance, for programs designed to improve school performance, of assessing the relationship between performance in the special program and performance in school. The assumption that program results

showing an improvement in academic performance will automatically be reflected in school performance is not tenable.

A second question this study sought to answer was whether or not the Palama Settlement Behavior Modification Sports Program was reaching its low-academic achievement target group. The data from Table 1 reveal that essentially there is no difference between the experimental and control group when they enter the program, except that the experimental group is absent 6.3 more days a year. Since the control and experimental groups are very much alike, academic gains achieved in the program cannot be attributed to brighter students participating in the Palama program than are enrolled in the regular school. Therefore, the Palama program is reaching students similar to a random sampling of students from the same schools, but not the targeted low-achieving group. The students in the Palama program are neither higher nor lower in academic achievement than the control group.

If it is desirable for the program to reach low-achieving youth, it may be possible to screen out the volunteers with higher grades and achievement test scores. By eliminating the relatively higher academic achievers, it may be possible to enroll more low-achievers. One advantage of having Palama youth similar to students enrolled in regular school is the ease with which these results would then generalize to similar public school students should the Department of Education wish to incorporate a program such as this in the public schools.

In conclusion, the two major findings are that the program results (i.e., improvement in math) are discernible on the post-program STEP and SCAT math sections, but do not show up in post-program school math grades. Secondly, the Palama program is reaching neither a high nor low achieving student, but one which is the same as a random sampling of students (control group) in the same grades and from the schools attended by the Palama program youth.

Relation to Other Studies

It is perhaps surprising that gains made in the Palama program correlate with improvement in math ability but have no effect on math performance, i.e., school math grades. However, similar results have been reported by Tharp and Wetzel[16]; and Fo and O'Donnell.[17] This may occur because of grades being more a function of the teacher's expectations than of the pupil's actual ability (Rosenthal and Jacobsen).[18] In Rosenthal and Jacobsen's study, teachers' expectancies were significant determinants of student responses. In each of the 18 classes, an average of 20% of the children were in the experimental condition. Teachers were told that these students would show unusual intellectual gains during the school year. The students were actually selected by a random procedure. These children showed a significantly greater gain in IQ scores than did the control children. The lower the grade level, the greater the effect.

The factor of teacher expectancy may be a possible explanation for the lack of carry-over of Palama gains to the public schools. It may be that for students who have not done well in the past, encouragement for work well done may be lacking. Students may pick up cues that the teacher doesn't think they will do really good work. In large classes especially, since these teachers may not be aware they give these cues, attention may be given to those students who have proven themselves to be high achievers with a corresponding lack of attention to the low achievers. If students have demonstrated that they can do well when positively reinforced by something that is of value to them (athletics), the ability to do the work has proven itself to be there.

The Wolf, Giles and Hall[13] study mentioned earlier includes the regular school teachers in their program by having students bring in homework from regular school to do and gain points. They also allow these same teachers to

add points for appropriate academic behaviors. In this way, the regular school teacher is a part of the program and can see the gains made by the student in the special program. The Palama program might do well to consider involving the regular school teachers, if this is possible.

Students could earn points at Palama for completing school homework assignments and for performance on school tests. Teachers would then become aware of the program and see it as an aid both to themselves and to the students. This might bridge the gap between the Palama performance and the school performance. It might also affect the presumed "attitude factor" by giving teachers a chance to see low-achievers achieving at Palama. A similar method could be used to affect school attendance. Points could be given at Palama for school attendance as indicated by school records. This might be done especially for students with a high absenteeism rate.

Implications

Previously, Polk and Schafer were quoted as saying, "that educational failure - by schools as well as by students - is directly related to delinquency."[19] Palama Settlement deals directly with youth from a low-income urban area who are possible future candidates for delinquency. The purpose of the program is two-fold; first, it is simply to improve math performance for its own sake, and second, an improvement in math skills as a result of the program is assumed to carry over into regular school math performance. There, success in coping with math would hopefully make school less aversive by increasing successes and thus reducing chances for dropping out.

They provide reinforcement (athletics) for prosocial behavior (studying, team cooperation, renouncing of criminal activities) and block rewards for antisocial behavior (crime, ignoring studies, noncooperation). The program has

shown itself to be worthy by demonstrating, through the use of a token economy system with athletics as the reinforcer, that low-academic achieving students can be raised 0.5 to 1.2 grade levels in 10 weeks as measured on the California and Stanford Achievement Tests. The present study has shown that although students make these gains, the improvement does not show up in post-program school grades.

The implications for further innovation and study are clear. Perhaps students could be partially reinforced between seasons in order to maintain some of the academic behaviors gained. Points could be earned between seasons for grades or attendance to be applied to the regular athletic-academic seasons. Also, these seasons might be extended, or a third sports season might be added.

The need for carry-over is important if students are to succeed and remain in school, hopefully less prone to delinquent problems. If, as studies have shown, the drop-out is more prone to delinquency, every effort must be made to assure his remaining and finding success at school.

In conclusion, two points are stressed: 1) academic success in a special program does not automatically result in academic improvement in school, and 2) if the results of such programs do not generalize to school performance, then they clearly cannot be expected to prevent delinquency (since their rationale is that such prevention occurs by improving school performance).

Two general changes need to be made as a result of this study. First, efforts to obtain generalization to school performance should be an integral part of every special academic program and secondly, data on future delinquency are needed to evaluate the assumed effects of such programs. These results indicate that such untested assumptions may be unwarranted. These implications not only apply to the program at Palama Settlement but also to the many other academic programs in Hawaii and the Mainland.

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APPENDIX A

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